

*Application No. 09/825,128
Amendment dated December 22, 2003
Reply to Office Action of October 22, 2003

RD-27905/USA

REMARKS

Applicants appreciate the consideration shown by the Office, as evidenced by the Final Office Action, mailed on October 22, 2003, and the December 16, 2003, telephone interview with Examiner Sikyin Ip. In that Office Action, Claims 9 and 11-25 were rejected by the Examiner. Claim 9 has been canceled, without prejudice. As such, Claims 11-25 remain in the case with none of the claims being allowed.

The October 22 Final Office Action has been carefully considered. After such consideration, Claim 9 has been canceled, without prejudice, and Claims 11-14 and 16, have been amended. Applicants respectfully request reconsideration of the application by the Examiner in light of the above amendments and the following remarks offered in response to the October 22 Final Office Action.

Rejections under 35 U.S.C. §112, second paragraph

Claims 9 and 11-15 have been rejected under 35 U.S.C. §112, second paragraph. The Examiner states that the expression "immediately" in Claim 9, step b), ii) "does not have the conventional meaning to exclude [a] step immediately before quenching step because quenching step requires a heating step to raise temperature back to first predetermined temperature after forced-air cooling (claim 11)."

Claims 9 and 11 have been rejected under 35 U.S.C. §112, first paragraph. The Examiner states that these claims are inconsistent with paragraph [0011] of the specification "because Claim 9, step b), ii) after forced-air cooling (claim 11) requires reheating back to first temperature before quenching in a bath. Reheating after forced-air cooling is not disclosed in [paragraph] [0011] of the specification."

Applicants submit Claim 9 has been canceled in the present amendment, thus rendering the rejections of the claim under 35 U.S.C. §112, second paragraph, moot. Applicants further submit that Claim 11 has been rewritten in independent form to recite all of the limitations of base Claim 9, from which Claim 11 originally depended, and that

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Claims 12-14 have been amended to depend from Claim 11. Applicants submit that the amendment does not narrow the scope of the claim, as amended Claim 11 contains only those limitations recited in the original Claim 11 and base Claim 9. Claim 11 now recites the steps of forced-air cooling the rigid die insert immediately after heat treating the rigid die insert at a first predetermined temperature and quenching the rigid die insert to room temperature in a room temperature bath immediately after forced-air cooling. Applicants submit that the steps recited in amended Claim 11 are now consistent with the invention, as described in paragraph [0011] of the specification.

Applicants therefore submit that the rejection of Claims 11-15 under 35 U.S.C. §112, second paragraph, is successfully overcome.

Rejections under 35 U.S.C. §103(a)

Claims 9, 11-15, and 21-25 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Gravemann (U.S. Patent 4,702,299) in view of Blackburn et al. (U.S. Patent 4,820,356).

Applicants submit that, in order to establish a *prima facie* case of obviousness, the references must teach or suggest all of the claimed limitations of the present invention. Accordingly, Applicants submit that the combination of Gravemann and Blackburn et al. do not teach or suggest all of the limitations of independent Claims 11 and 21. Specifically, neither reference teaches nor suggests forced-air cooling *immediately* following heat treating the rigid die insert at the first temperature followed by *immediate* quenching of the forced-air cooled rigid die insert, as recited in Claims 11 and 21. Gravemann, as noted by the Examiner, does not disclose such heat treatment. In contrast to the single heat treatment prior to quenching to room temperature, as claimed in the present invention, Blackburn et al. instead teach two distinct heat treatments at two different temperatures: a first heat treatment (column 2, lines 34-37) followed by the additional step of *controlled* cooling to a second temperature (column 2, lines 41-44), after which the article is rapidly cooled (column 2, lines 51-53).

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Applicants further submit that neither reference teaches dissolving gamma-prime particles and growing additional gamma-prime particles in the rigid die insert that are *smaller* than the gamma-prime particles that are dissolved, as recited in Claims 11 and 21. Applicants submit that Gravemann is silent as to the dissolution and growth of gamma-prime particles, and that Blackburn et al. actually teach *away* from growing *smaller* gamma-prime particles. Blackburn et al., in column 2, lines 18-20, state: "An important characteristic of the invention process is that the starting grain size is *held essentially constant* throughout the process (emphasis added)." In addition, the reference, in column 3, lines 65-67, states: "At the conclusion of the invention heat treatment process the article will have a fine grain size which approximates that of the starting grain size..." Thus, Blackburn et al. teach the growth of gamma-prime particles that are the same size as those originally present in the article, *not* the growth of *smaller* gamma-prime particles, as recited in Claims 11 and 21.

The Examiner states that, in Claims 16 and 21, the phrase "below a solvus temperature" reads on "any controlled cooled temperature above room temperature; as disclosed by Blackburn et al." Applicants submit that while the step of heating the first temperature may read on the step of heating Rene 95 superalloy (or die insert, as claimed in Claim 21) to a first temperature that is below a solvus temperature may read on Blackburn et al., the reference, either alone or in combination with Gravemann, as presented above, does not teach or suggest all of the limitations of either Claim 16 or Claim 21.

Applicants therefore submit that, because the combination of references neither teaches nor suggests all of the limitations of amended independent Claims 9 and 21, the rejection of Claims 11-15 and 21-25 under 35 U.S.C. §103(a) as being unpatentable over Gravemann in view of Blackburn et al. is successfully overcome.

Claims 16-20 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Blackburn et al.

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Applicants submit that Blackburn et al. alone do not teach or suggest the limitation of *immediately* quenching the Rene 95 superalloy from the first predetermined temperature to room temperature in a bath, as recited in Claim 16. As presented above, the reference, instead of teaching the single heat treatment prior to quenching to room temperature, as claimed in the present invention, teaches two distinct heat treatments at two different temperatures: a first heat treatment followed by the additional step of *controlled* cooling to a second temperature, after which the article is rapidly cooled.

Applicants further submit that Blackburn et al. neither teach nor suggest dissolving gamma-prime particles and growing additional gamma-prime particles in the rigid die insert that are *smaller* than the gamma-prime particles that are dissolved. Applicants submit that the reference actually teaches *away* from growing *smaller* gamma-prime particles. The reference, in column 2, lines 18-20, states: "An important characteristic of the invention process is that the starting grain size is *held essentially constant* throughout the process (emphasis added)." In addition, the reference, in column 3, lines 65-67, states: "At the conclusion of the invention heat treatment process the article will have a fine grain size which approximates that of the starting grain size..." Thus, Blackburn et al. teach the growth of gamma-prime particles that are the same size as those originally present in the article, *not* the growth of smaller gamma-prime particles, as recited in Claims 11 and 21.

Applicants therefore submit that, because Blackburn et al. neither teach nor suggest all of the limitations of amended independent Claim 16, the rejection of Claims 16-20 under 35 U.S.C. §103(a) as being unpatentable over Blackburn et al. is successfully overcome.

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In light of the amendment and remarks presented herein, Applicant submits that the case is in condition for immediate allowance and respectfully requests such action. If, however, any issues remain unresolved, the Examiner is invited to telephone the Applicant's counsel at the number provided below.

Respectfully submitted,



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